



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,468	06/23/2003	Venkat Selvamanickam	1014-SP156-US	2661
69686	7590	02/10/2011		
LARSON NEWMAN & ABEL, LLP 5914 WEST COURTYARD DRIVE SUITE 200 AUSTIN, TX 78730			EXAMINER AUSTIN, AARON	
			ART UNIT 1784	PAPER NUMBER
			NOTIFICATION DATE 02/10/2011	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

edougherty@LNAlaw.com
ecox@LNAlaw.com
mherzig@LNAlaw.com

Office Action Summary	Application No. 10/602,468	Applicant(s) SELVAMANICKAM ET AL.	
	Examiner AARON S. AUSTIN	Art Unit 1784	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-34 and 36-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-34 and 36-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/11/10, 10/26/10</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Reopening in Response to Information Disclosure Statement

The information disclosure statement (IDS) submitted on 10/26/10 was filed after the mailing date of the Examiner's Answer on 12/8/08. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner. (Please note, the same reference was submitted on 1/11/10 without the required fee thus requiring the refiling of the IDS of 10/26/10).

If the examiner has specific knowledge of the existence of a particular reference or references which indicate non-patentability of any of the appealed claims as to which the examiner was reversed, he or she should submit the matter to the Technology Center (TC) Director for authorization to reopen prosecution under 37 CFR 1.198 for the purpose of entering the new rejection. See MPEP §§ 1002.02(c), 1214.04, and 1214.07.

In the present case, review of the document submitted in the IDS of 10/26/10 (of which EP 1271666 to Onabe et al. is an equivalent and US 6,669,774 to Zhang et al. appears in the prosecution history thereof) has indicated the appealed claims are non-patentable as set forth below. Prosecution on the merits of this application is therefore reopened.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 23-28, 31-34, and 40-42 are rejected under 35 U.S.C. 102(a and e) as being anticipated by Onabe et al. (EP 1271666).

Onabe et al. teach an oxide superconducting conductor comprising a substrate tape and overlying superconductor layer (paragraph [0029]). The superconductor layer is comprised of at least three superconductive films 22a-22c of the same material (Fig. 4A; paragraph [0087]). The films are atomically bonded and free of intervening layers (Fig. 4A; paragraph [0035]).

Regarding claims 24-27, the substrate may be comprised of nickel, a nickel alloy, or stainless steel (paragraph [0089]).

Regarding claim 28, the substrate may include an overlying layer which may be considered a buffer between the base metal and the oxide superconducting layers (paragraphs [0085] and [0088]).

Regarding claims 31-34, the superconductive layer is comprised of a high temperature rare-earth oxide such as YBCO or Sm123 (paragraph [0087]).

Regarding claim 40, an exemplary thickness of 0.5 microns is provided for the superconductive layer such that each of the three layers forming the superconductor layer does not have a thickness of 1.5 microns (paragraph [0199], Table 10).

Regarding claim 41, as like materials are used in a like manner to the claims, the current density capacity is expected to be as claimed.

Regarding claim 42, the critical current density (J_c) is greater than 0.6 MA/cm^2 (Table 10).

Claims 23-25, 27-34, 36, and 38-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhang et al. (US 6,669,774).

Zhang et al. teach a multi-layer article comprising a substrate tape and overlying superconductive layer (column 19, lines 36-64). The superconductive layer is comprised of at least three superconductive films of the same superconductor material (column 19, lines 50-64). The layers are atomically bonded and free of intervening layers (Fig. 3; column 19, lines 50-64).

Regarding claims 24-25 and 27, the substrate may be comprised of nickel or a nickel alloy (column 10, lines 11-58).

Regarding claim 28, the substrate may include a buffer between the base metal and the oxide superconducting layers (column 11, lines 16-20; column 12, lines 44-58).

Regarding claim 29, the buffer layer may have a bi-axial texture (column 3, lines 55-57).

Regarding claim 30, the buffer layer may comprise YSZ (column 12, lines 44-58).

Art Unit: 1784

Regarding claims 31-34, the superconductive layer is comprised of a high temperature rare-earth-metal-barium-copper-oxide such as YBCO or Sm123 (column 12, lines 12-17).

Regarding claim 36, the superconductive layer may be comprised of four or more superconductive films (column 19, lines 50-64).

Regarding claims 38-40 and 43, the superconductive layer has a thickness of about 1 to 10 microns (column 19, lines 36-45).

Regarding claim 41, as like materials are used in a like manner to the claims, the current density capacity is expected to be as claimed.

Regarding claim 42, the critical current density is greater than $0.6\text{MA}/\text{cm}^2$ (column 12, lines 30-37).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US 6,669,774) in view of Onabe et al. (EP 1271666).

Zhang et al. teach a multi-layer article comprising a substrate tape and overlying superconductive layer as described above.

Zhang et al. do not teach the substrate tape as comprising stainless steel.

Onabe et al. teach an oxide superconducting conductor comprising a substrate tape and overlying superconductor layer (paragraph [0029]). The superconductor layer is comprised of at least three superconductive films 22a-22c of the same material (Fig. 4A; paragraph [0087]). The films are atomically bonded and free of intervening layers (Fig. 4A; paragraph [0035]). The substrate may be comprised of materials having superior high temperature strength such as nickel, a nickel alloy, or stainless steel (paragraph [0089]). Therefore, as Onabe et al. clearly teach stainless steel is functionally equivalent in providing a substrate tape having superior high temperature strength for multilayer superconductive films, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use stainless steel as the substrate metal of Zhang et al. Thus the claimed invention as a whole is *prima facie* obvious over the combined teachings of the prior art.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US 6,669,774) in view of Nagaya Shigeo (JP 2003-36744).

Zhang et al. teach a multi-layer article comprising a substrate tape and overlying superconductive layer as described above.

Zhang et al. do not teach at least two of the superconductive films in direct contact with each other having different thicknesses.

However, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the thickness for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only

Art Unit: 1784

routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present case, the thickness of the layers directly impacts the current capacity and current density capability of the article by providing an avenue for the current to pass. Thus the thickness of the layers is a result effective variable.

Furthermore, Nagaya teaches forming a plurality of oxide superconductor layers on a tape-shaped base material. Each layer thickness of the laminated oxide superconductor is individually selected between 0.1 and 0.4 microns. Therefore, as Nagaya et al. clearly teach the thickness of individual superconductive layers in contact with each other may be selected separately to achieve a high critical current, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to form at least two of the superconductive films in direct contact with each other having different thicknesses. Thus the claimed invention as a whole is *prima facie* obvious over the combined teachings of the prior art.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onabe et al. (EP 1271666) in view of Nagaya Shigeo (JP 2003-36744).

Onabe et al. teach an oxide superconducting conductor comprising a substrate tape and overlying superconductor layer as described above.

Onabe et al. do not teach at least two of the superconductive films in direct contact with each other having different thicknesses.

However, it would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the thickness for the intended application, since it has

Art Unit: 1784

been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present case, the thickness of the layers directly impacts the current capacity and current density capability of the article by providing an avenue for the current to pass. Thus the thickness of the layers is a result effective variable discoverable by one of ordinary skill in the art.

Furthermore, Nagaya teaches forming a plurality of oxide superconductor layers on a tape-shaped base material. Each layer thickness of the laminated oxide superconductor is individually selected between 0.1 and 0.4 microns. Therefore, as Nagaya et al. clearly teach the thickness of individual superconductive layers in contact with each other may be selected separately to achieve a high critical current, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to form at least two of the superconductive films in direct contact with each other having different thicknesses. Thus the claimed invention as a whole is *prima facie* obvious over the combined teachings of the prior art.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AARON S. AUSTIN whose telephone number is

Art Unit: 1784

(571)272-8935. The examiner can normally be reached on Monday-Friday: 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aaron S Austin/
Primary Examiner, Art Unit 1784

/William Krynski/
Director Designee, TC 1700